A Look At The World's Tiniest PC

Tiqit's Matchbox PC isn't exactly a computing powerhouse (it uses a 486-SX processor running at 66MHz), but it wasn't meant to be. What the Matchbox PC lacks in brawn, it makes up for in size: The MPC is about the size of a credit card and can run Windows 95, NT, and Linux.

"The Matchbox PC was a demonstration. It was not meant to be a finished product," says Ian Blasch, CEO of Tiqit. "What we were trying to project with the MPC is that you can build an x86 system that small."

Despite the fact it's an unfinished demo, the little computer has been popular with consumers. Its market consists primarily of hobbyists, research and development centers, and government labs. "These are people who have a very specific application in mind," Blasch says.

Finding parts. Tiqit designed the MPC about two years ago. "The biggest issue was the parts that were available. The industry is not focused on building small PCs. Everything from connectors to processors to screens have been optimized for power, not necessarily for size. That was one of the issues that we really struggled with. Unless you have a huge war chest behind you and can build custom-made components, it is difficult to it get it down to a size that is agreeable to the user," he says.

As a result, many parts in the MPC came from the cell phone industry, which does place a premium on size. The 486 chip, which was underpowered even two years ago, was chosen because it was one of the smallest processors available.

"From a usage standpoint, you have two big data points: laptops and PDAs. PDAs today are not true handheld computers. You can have a lot of CPU power in a laptop or very little in a PDA. We're trying to straddle this middle ground," he says.

The biggest benefit is you can run standard x86 applications on a small platform without resorting to the specialized code necessary for a PDA OS or embedded system. There are tradeoffs: Some things just can't be done in such a small form factor. For instance, PC cards use standard interfaces that just can't be shrunk.

So don't worry if this isn't exactly what you were hoping for. The Matchbox is just the beginning. "We are working on products that blow the Matchbox away," Blasch says. The company's next product will be announced at CeBIT in March.

by Kevin Savetz

Here are the numbers behind the Matchbox PC.

Name: Matchbox PC
Manufacturer: Tiqit (www.tiqit.com)
CPU: 66MHz 486-SX
Memory: 16MB SDRAM
Storage: 1GB Microdrive
Features: Ethernet, two serial ports, parallel port, floppy port, IDE controller
Dimensions: 2.75 inches high x 1.97 inches wide x 0.95 inches deep
Weight: 3.3 ounces

seek times are better than 12. But are you ready for the next generation of techno-jargon? The implications of nanotechnology on everyday computing revolve around a techno-speak lexicon that will be new even to the most cutting-edge computer geeks.

Nanotubes may be the building blocks of computing in the next decade. Discovered in 1991, they are hollow cylindrical molecules of carbon atoms. The ways in which the atoms meet to form a cylinder determine the nanotube's conductive properties. Not only are nanotubes hundreds of times stronger than steel, but they are also excellent electrical conductors and can be manipulated to perform as transistors, the basic element in building memory and processors that are only nanometers thick. IBM researchers are especially optimistic that nanotubes will replace silicon someday, as its researchers are already making rudimentary circuits from the material.

Nanotubes are versatile enough to affect all aspects of computing as we know it. They could be applied to new types of capacitors, longer-lasting batteries, magnetic storage, and even flat-screen displays. In fact, Texas-based Carbon Technologies is already mass-producing and selling nanotubes to researchers at $500 a gram. Chips made purely from nanotechnology are more

A Better World Through Molecules

Long before we wear nanocomputers under our skin or in our clothes, the field of nanotechnology is likely to give us a number of these more immediate advances:

Soft Lithography. A new approach to stamping a pattern (such as a circuit) onto a material using soft rubber nanostructured forms. This technique could allow for nano-sized circuitry that can be printed onto materials other than silicon and will not require costly clean room production facilities.

MRAM (Magnetic RAM). This would be a high-density, nonvolatile type of memory of microscopic size so that operating systems and massive amounts of data could be booted and accessed quickly on a device of any size.

AFM Storage. AFM (Atomic Force Microscopy) that is used to see and manipulate atoms in nanotechnology research uses tips that are a single atom wide. These tips may someday be arranged into arrays so that they can read and write data that are packed much more tightly than we find on today's CD-ROMs and hard drives.